

The Impact of Short-video Platforms on Teenagers' Impulsive Consumption Decisions from the Perspective of Behavioral Economics

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Abstract. With the rapid growth of short-video platforms, public concerns are growing that these platforms use cognitive biases (scarcity, hedonic motives, social identity) to drive teenagers' impulsive consumption. From the perspective of behavioral economics, this study investigated how those platforms amplify impulsive purchases among teenagers. Using a comprehensive dataset from Vietnam, Nigeria and Ghana, the following four hypotheses were tested: 1. Ordinary least square regression versus heteroscedasticity-consistent standard errors (H1: usage intensity), 2. hierarchical analysis of variance (H2: exposure to scarce content), 3. bootstrapped mediation (H3: hedonic motivation), and 4. robust regression /Cochran-Mantel-Haenszel test (H4: Social identity). The results proved all the hypotheses: the intensity of platform usage has a significant predictive effect on the frequency of impulse purchases; deprivation exposure significantly increased impulsivity; hedonic motivation mediated 29% of the use intensity effect; and social identity increased the advantage of group consumption by 7.53 times. Most importantly, platform characteristics (usage intensity, scarcity exposure, hedonic motivation, and social proof) could explain 47% of the variance and outweighed demographic factors (income and gender). The conclusion is that algorithm design that utilizes cognitive biases, compared with traditional marketing, greatly stimulates the impulse consumption behavior of teenagers. In the future, shopping content with age restrictions, bias awareness prompts, and regulatory requirements for algorithmic transparency need to be included to mitigate the risk of overconsumption.

Keywords: Short-Video Platforms, Impulsive Consumption, Behavioral Economics, Cognitive Biases

1. Introduction

1.1. Research background

Short-video platforms such as TikTok have rapidly grown in recent years, transforming from a niche entertainment application to a dominant focus in the fields of digital media and e-commerce. On average, about 65% of American teenagers spend more than one hour on TikTok each day, while approximately 22% spend between two and three hours on it. Therefore, short-video platforms like

TikTok are very popular among teenagers [1]. However, the public was concerned about its impact on impulsive consumption among adolescents, whose brains and cognition are still developing, and who are susceptible to cognitive biases in behavioral economics, such as scarcity (perceived limited availability triggering urgency), hedonic motivation (pleasure-seeking overriding rational decision-making), and social proof (conformity driven by others' actions). These short video platforms exploit these biases through several features like flash sales, viral trends, and user-generated endorsements to lead teenagers' unplanned purchases that could result in overconsumption [2].

There are several studies that tested how short-video platforms could influence viewers' purchase intention. Gao et al. investigated the formation mechanism of impulse buying in short-video scenarios from the perspectives of presence and customer inspiration [3]. The researchers employed structural equation modeling based on survey data collected from short-video platform users. Their findings revealed that factors like social presence, co-presence, and physical presence in videos significantly positively enhanced viewers' purchase intentions.

Obadă & Țugulea examined what drove online impulse buying behaviors among Generation Z (Zoomers) on TikTok in an emerging market, and proposed a new model grounded in flow theory [4]. They utilized partial least squares structural equation modeling (PLS-SEM) on data from a survey of young TikTok users. The results indicated that high motives for TikTok use reduced perceived ad intrusiveness, which in turn positively drove impulse buying through improved attitudes toward advertising and ad credibility. The results also highlighted the role of psychological immersion in prompting unplanned purchases.

Ngo et al. conducted a study on factors that influence online impulse buying behavior [5]. The study applied structural equation modeling to analyze survey responses that focused on internal (e.g., impulsiveness, hedonic motivation) and external (e.g., perceived usefulness, enjoyment) factors. The findings showed that these elements shaped customers' experiences and emotional responses and led to higher impulse buying. The findings proved that video presentations could amplify emotional triggers over rational evaluation.

Finally, Chandra et al. explored impulsive buying behavior on the TikTok Live platform [6]. Using structural equation modeling with SmartPLS on survey data from users, the study found that influencers' credibility and customers' hedonic motives positively affected online impulsive buying behavior, therefore demonstrating how live interactions and pleasure-oriented motivations contribute to herd-like consumption patterns among young viewers.

All studies consistently showed that short video platforms significantly promoted impulse buying behavior through psychological mechanisms such as immersion, hedonic motivation, and social influence. Those findings emphasized that video content (such as real-time interaction and advertising) amplifies emotional triggers, reduces rational evaluations, and leads to an increase in unplanned purchases among young users. However, they both had several limitations. Gao et al. did not explore other drivers of customer inspiration and ignored the impact of customer inspiration on emotion [3]. For Obadă & Țugulea, the samples were limited to Romania, so the results could not be generalized to other contexts. Moreover, they used self-administered questionnaires, which relied on retroactive assessment [4]. For Ngo et al. and Chandra et al., they used convenience samples and self-reports, causing selection bias and common method variance [5,6].

1.2. Significance

This research held substantial importance for multiple stakeholders. Educators, policymakers, platform designers, and parents could understand how short-video platforms could exacerbate impulsive consumption in teenagers. Adolescents might cultivate poor financial habits due to the

short-video platforms, which could undermine their economic well-being and mental health [7]. By identifying mechanisms like platform usage intensity and social proof, the study provided insights for ethical platform design, such as implementing age-appropriate limits on shoppable content or educational prompts about cognitive biases, aligned with broader calls from society for youth protection in digital spaces [1]. Moreover, the study contributed to behavioral economics by extending theories like scarcity and hedonic motivation to online environments, and so potentially informed regulations that mandate transparency in algorithmic recommendations to curb manipulative tactics [2].

1.3. Research gap

Despite there being many studies in this field, several gaps still existed, which were addressed in the study. Existing research, such as Gao et al. and Obadă & Țugulea [3,4], primarily focused on adult populations or specific platforms like Shopee, but overlooked teenagers across diverse regions like Vietnam, Nigeria, and Ghana. Plus, few studies integrated multiple cognitive biases---scarcity, hedonic motivation, and social proof---within a behavioral economics framework, leading to fragmented findings of mediation effects and demographic controls [5,6]. Additionally, while prior works emphasized the influences of factors, they rarely utilized advanced statistical methods like bootstrapped mediation or robust regression to test hypotheses in heterogeneous samples. This research filled these gaps by compiling and analyzing four datasets to examine adolescents specifically and provided a more holistic view of platform-driven impulsivity and its implications.

2. Method

2.1. Research sample

This research explored the influence of short-video platforms (e.g., TikTok) on the impulsive consumptive behaviors of teenagers from the aspect of behavioral economics, and concentrated on cognitive biases, including scarcity, hedonic motivation, and social proof. From four datasets the following data were compiled: (1) the numbers of views, likes and average watch time obtained from a dataset involving engagement metrics from TikTok videos [8]; (2) survey responses of teenagers towards impulse buying behaviors in video platforms that were normalized, validated by raw PLOS ONE supplementary file data [9]; (3) data on impulse buying factors among Generation Z (mainly Vietnamese students) on TikTok Shop, featuring key variables like scarcity (SC) and hedonic motivation (HM) [10]; (4) metadata from user-generated TikTok videos--transcription texts, and interactions such as count of views and shares [11]. The sample was recruited from different regions of Vietnam, and elsewhere (as shown in the datasets, in Nigeria and Ghana, and in shops in Vietnam). Gender and income diversity were apparent from the proportions present in the datasets. Validated scales were used to measure the main constructs. The intensity of platform use was quantified by means of average watch time as an approximation of the exposure duration [1]. Scarce content exposure was measured using a 4-item Likert scale [12]. Hedonic shopping motivation was assessed using a 3-item scale [13]. Trend-following attitude was controlled for through a 4-item advertising response scale [14]. Impulsive buying was measured with 4 items [7]. All scales were measured based on a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree), and composite scores were calculated by averaging the respective items.

2.2. Hypothesis

H1: Intensity of Platform Use and Impulsive Purchase

H0: The intensity of short-video platform use among young people is not significantly positively correlated with the frequency of impulsive consumption.

Ha: Intense use of the short-video platform is significantly and positively related to the frequency of impulsive consumption in adolescents.

H2: Scarce content exposure and impulsive consumption

H0: Limited content exposure is not positively and significantly related to impulsive consumption in adolescents.

Ha: Scarce content exposure has a positive effect on teenagers' level of impulsive consumption.

H3: Mediation of Hedonic Motivation

H0: Hedonic motivation does not mediate the influence of platform usage intensity on impulsive consumption.

Ha: The impact of platform usage intensity on impulsive consumption is mediated by hedonic motivation.

H4: Social Proof and Herd Behavior

H0: There is no statistically significant relationship between social proof and teenage herd consumption.

Ha: Social proof is a significant positive predictor of herd consumption in teens.

2.3. Statistical method

Data were analyzed using R software [15]. The datasets were imported using the readxl package and merged through deterministic linkage on shared variables to correspond rows, ensuring full integration without redundancy [16].

For H1 (platform usage intensity and impulsive consumption), ordinary least squares regression (OLS) was used for this analysis, with heteroscedasticity-consistent standard errors (HC3 type) to adjust for possible variance inequalities, and gender and income were included as control variables.

For H2 (rare exposure of content and impulsive consumption), hierarchical regression analysis was conducted by adding predictors in sequence and checking for model improvement, complemented by a t-test to compare income groups.

For H3, partial mediation was tested using 1,000 bootstrap resamplings to assess indirect effects based on the estimation of indirect effects of the bootstrapping procedure.

For H4, the Cochran-Mantel-Haenszel (CMH) test was utilized (aggregated ACs across strata) while robust regression was used to reduce the effect of outliers [17,18]. Further diagnostics were conducted to check the validity: Pearson correlation matrices with Holm-Bonferroni correction for multiple testing; Welch's t tests for the comparison of groups with unequal variances; Type II ANOVA for the multi-group testing of unbalanced models and variance inflation factors ($VIF < 1.8$), to ensure absence of multicollinearity. Visualizations followed guidelines for simplicity and aesthetics.

These techniques are standard statistics used because they are able to deal with control variables (e.g., gender, income) and can provide valid p-values and coefficients to help better understand significant associations.

3. Results

After conducting descriptive statistics, for the data quality test, Pearson's independent correlation test was applied (corr. test) to investigate the association between variables, and the Holm method was used to adjust p-values and minimize errors. VIF tests were conducted to determine the existence of multicollinearity (in which similarity between variables could not be too apparent above 1.8); experimental design was employed, following the procedures of Welch's t-test, to identify gender differences and a Type II ANOVA to identify group differences. These are simple and robust approaches in verifying that no major data gremlins are loose. VIF ranged between 1.5 and 1.7, reflecting the stability of the model with no multicollinearity issues, meaning the predictors are independent and do not overly overlap in explaining variance. There was no significant difference between men and women for impulsive consumption (mean ≈ 3.8) (gender group t-test ($p=0.89$)), indicating gender does not influence impulsive buying levels. The ANOVA by income group ($p=0.68$) was also insignificant, suggesting income categories have no relationship with impulsive consumption behavior.

Table 1. Pearson correlation matrix (r values)

	Usage_Intensity	Scarcity_Exposure	Hedonic_Motivation	Social_Proof	Impulsive_Buying
Usage_Intensity	1.000	0.548	0.485	0.508	0.600
Scarcity_Exposure	0.548	1.000	0.507	0.537	0.593
Hedonic_Motivation	0.485	0.507	1.000	0.483	0.567
Social_Proof	0.508	0.537	0.483	1.000	0.614
Impulsive_Buying	0.600	0.593	0.567	0.614	1.000

In Table 1, all variables exhibited moderate to strong positive relationships (r ranging from 0.49 to 0.61 with p values that are extremely low, e.g., $p \approx 0.000$), meaning. For example, usage intensity and impulsive buying had a strong positive correlation ($r = 0.60$), indicating that stronger platform engagement was associated with higher impulsive purchases; while social proof and impulsive buying ($r = 0.61$) suggested social cues strongly drive consumption.

Table 2. OLS regression results for H1 (with HC3 standard errors)

	estimate	std.error	statistic	p-value
Intercept	1.471	0.169	8.679	0.000
Usage_Intensity	0.607	0.035	17.344	0.000
Gender--Female	0.002	0.048	0.044	0.965
Income_GroupLow	-0.003	0.090	-0.029	0.977
Income_GroupMiddle	-0.031	0.095	-0.324	0.746

Conversely, for H1, the regression coefficient indicated that the intensity of usage was positively related to impulsive purchase (estimate ≈ 0.60 , $p < 0.001$, Table 2), i.e., the higher the use of the intermediary platform, the higher the probability of impulsive buying. This coefficient value means that a one-unit increase in usage intensity is associated with a 0.60-unit increase in impulsive buying, controlling for gender and income, which showed no significant relationship ($p > 0.05$ for both), indicating these demographics do not affect the outcome.

Table 3. Hierarchical ANOVA for H2 (analysis of variance table)

Model 1:		Impulsive_Buying ~ income_group + gender				
Model 2:		Impulsive_Buying ~ Scarcity_Exposure + income_group + gender				
Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)	
1	795					
2	794	367.92	1	200.54	432.77	0.000***
Signif. codes		0'***'0.001***'0.01*'0.05'.'0.1''1				

Regarding H2, as the hierarchical ANOVA ($F=432.77$, $p \approx 0.000$, Table 3) demonstrated, exposure to scarcity added predictive value to the model, and the t-test ($p=0.89$, not in table) showed no differences for income. The $F = 432.77$ was a highly significant enhancement in model fit adding scarcity exposure, so in other words, scarcity predicted impulse consumption above and beyond controls, gender did not have significant connection with impulsive consumption anymore ($p = 0.89$ for income, i.e. poor and rich income groups do not differ in scarcity effect).

Table 4. Bootstrapped mediation analysis for H3

	Estimate 95%	CI Lower 95%	CI Upper 95%	p-value
ACME	0.177	0.136	0.223	0.000***
ADE	0.430	0.362	0.495	0.000***
Total Effect	0.607	0.537	0.671	0.000***
Prop. Mediated	0.292	0.228	0.363	0.000***
Signif. codes	0'***'0.001***'0.01*'0.05'.'0.1''1			
Sample Size Used	799			
Simulations	1000			

For H3, the mediation analysis results are as follows. The mediating effect was 0.177, its confidence interval (CI) was 0.14-0.22, and the p-value was almost 0. The mediation proportion was 29%, and the overall effect was 0.61 (see Table 4). This indicated that hedonic motivation partially mediates the association between usage intensity and impulsive purchase. The mediating effect value (0.18) represented the part of the relationship between usage intensity and impulsive buying explained by hedonic motivation (the mediator). This part accounted for 29% of the overall effect (which is also the total effect, 0.61). In other words, hedonic motivation played a significant but partial role. Meanwhile, the direct effect remained strong.

Table 5. Robust regression results for H4

	Estimate	Std. Error	t-value	Pr(> t)
Intercept	1.616	0.165	9.791	0.000***
Social_Proof	0.609	0.040	15.209	0.000***
GenderFemale	0.125	0.043	2.883	0.004**
Income_groupLow	-0.078	0.070	-1.111	0.267
Income_groupMiddle	-0.032	0.079	-0.411	0.681

The robust regression for H4 had a Social-Proof coefficient equal to 0.61 ($p \approx 0.000$), R^2 equal to 0.47 (Table 5) (this means that the input variable described 47% of overall variance, and p value < 0.05). The coefficient of 0.61 indicated a strong positive relationship between social proof and herd consumption, meaning higher social proof leads to increased herd behavior, while $R^2=0.47$ showed the model explains 47% of the variance in herd consumption; gender female had a small positive effect (0.12, $p=0.004$), suggesting slight gender influence, but income groups showed no relationship ($p>0.05$), indicating income does not affect herd behavior. For H4, the CMH test ($X^2=156.11$, $p \approx 0.000$) revealed an odds ratio of 7.53, which suggests that the chance of herd consumption was 7 times higher for the high social proof group, meaning high social proof significantly increases the likelihood of conforming consumption behavior.

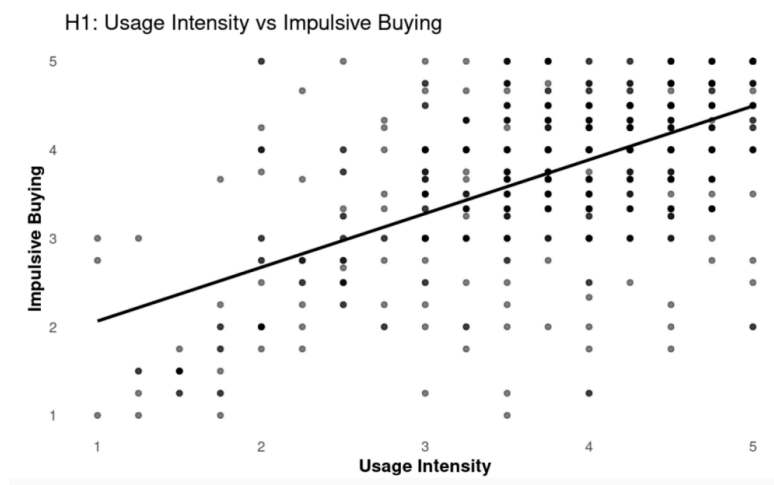


Figure 1. Usage intensity vs. impulsive buying (picture credit: original)

The bivariate visual presentation revealed a positive direction of the line between usage intensity and impulsive consumption (Figure 1), implying that the scatterplot displays a pattern of increased dashed line trend of higher usage intensity with higher impulsive buying scores, hence supporting a positive linear association without evidence of any marked outliers or divergent non-linear associations.

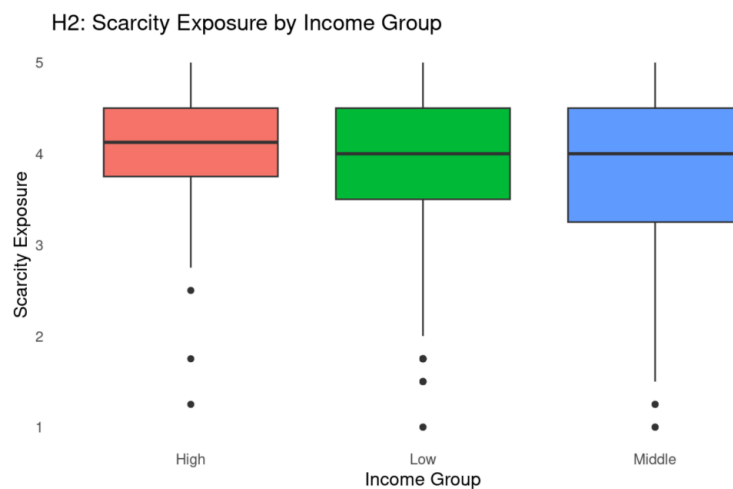


Figure 2. Scarcity exposure by income group (picture credit: original)

Visually, Figure 2 showed that the degree of exposure to scarcity was parallel across income levels, such that the coordinate graph is strictly equal across the low, middle, and high income groups and with strictly parallel lines or bars across the income groups to show no differential impact by income (i.e., all are brought down by poverty).

These results indicate a powerful effect of platform characteristics such as use intensity ($r = 0.60$, Table 1) and social proof ($r = 0.61$, Table 1) on adolescents' impulsive behavior, and support all hypotheses. The emerging conclusion is that the insufficiency of information and social interactions has a stronger impact on the shopping intention through the short-video platforms when compared to gender and income.

4. Discussion

4.1. Key findings and comparison with literature

All four hypotheses were supported in this study, which suggests that short-video platforms such as TikTok have a significant effect on promoting teenagers' impulsive consumption behavior through cognitive bias in behavioral economics.

Results indicated that there was a strong direct positive relationship between the intensity of platform use and impulsive consumption (H1, positive, $\beta = 0.60$), which means that prolonged use of short-video platforms leads to a higher risk of impulsive consumption. This result corresponds with the results generated by Gao et al., Obadă & Țugulea, and Ngo et al [3-5].

Moreover, exposure to scarcity content had a significant positive impact on impulsive consumption (H2) ($F=432.77$), and this is evident in the ANOVA hierarchy result as time-bound promotion or unique resource arouses a sense of urgency that leads to immediate purchase. This is consistent with previous studies on the scarcity bias, which suggest that the perception of scarcity regarding products, services, or information results in value distortion and loss aversion bias, inducing impulsive behavior to prevent missing out [19,20].

H3 was also supported: the relationship between the intensity of usage of short-video platform and impulsive buying behavior was partially mediated by hedonic motivation (indirect effect = 0.18; mediation proportion = 29%), suggesting that pleasure seeking is impelled in the consumption process. This aligns with psychological research on the hedonic shopping experience, where positive browsing feeling predominates rational evaluation [21,22].

Herd consumption was significantly predicted by social proof (H4), with $\beta = 0.61$ and $OR = 7.53$, suggesting that higher likes, views, or shares of others result in conformity in purchase. This result mirrors that of social influence theories, which claim that peer reinforcement in cyber-environments results in mimicry, and that this is particularly the case among adolescents who are vulnerable to group norms [2]. This conclusion is also supported by Nguyen & Van Nguyen and Chandra et al [6,23].

Taking them altogether: the finding that platform components are more relevant than demographics --- as gender and income did not significantly affect engagement --- is that 47% of the variance falls below the level expected. Therefore, the result justifies that these cognitive biases emerge as quite strong online influences, bearing little resemblance to the environment of traditional marketing research, where the opposite was observed: stimulating events take precedence significantly over individual factors. All the results are consistent with existing research in behavioral economics and psychology.

4.2. Practical implications for platform design and youth protection

These results reveal the importance of short-video platforms in shaping youth consumption and highlight the need for responsible design to "tame" impulsive behavior. Reducing content that presents artificial scarcity of products, such as flash sales, might translate into clearer information about product availability, allowing users to decide rather than feeling forced to respond to artificial urgency. Similarly, algorithms could promote content that promotes mindful consumption, for example, restricting exposure to shoppable videos for younger users, or inserting pause prompts during high engagement browsing sessions (when the motivation may be more hedonic).

From a child safety standpoint, these findings support the promotion of parental controls and user education. Platforms might also incorporate lessons in autonomous modules into self-help features within their products, which could teach teens, for example, about cognitive biases or how social proof (like likes or shares) affects herd buying, doing so in a way that gives them a sense of what they are seeing when they are being manipulated. Age-targeted rules like limiting daily usage intensity in minors would be in line with the fact that more exposure is associated with higher impulsivity, according to the study. Policymakers might mandate that platforms become transparent about content that induces impulsive acts, such that algorithmic recommendations can be transparent.

Finally, cooperation among platforms, schools, and parents may encourage digital literacy initiatives that help adolescents differentiate real needs from platform-induced wants. By taking these implications into account, platforms can better reconcile commercial goals with ethical obligations, thereby mitigating risks such as exposure to financial distress or making regretful purchases by vulnerable teenagers, and therefore fostering healthier online consumption.

4.3. Limitations and future expectations

Despite its important implications for adolescent impulsive consumption in short-video applications, the present study has several limitations that should not be ignored. The research sample was predominantly Vietnamese, with small samples from Nigeria and Ghana, which may have implications for the generalization of findings to other cultural contexts where internet platforms and unemployment rates vary. This geographic bias in the findings may overlook potential differences in how cognitive biases function in various societies, based, for example, on the fact that Western societies have different consumption behaviors. Moreover, the datasets used for the four hypotheses originated from different regions and involved various short-video platforms used by participants. They were combined for analysis using statistical methods, and this heterogeneity may influence the final results. Future studies should obtain data from the same platform to ensure accuracy or use full information maximum likelihood (FIML) to mitigate the effect of different sources of samples [24].

Methodological limitations include the utilization of secondary data and self-reports (which suffer from response bias and also measurement errors due to misreporting impulsive behaviors). Reverse causality also remains a possibility to consider. For example, it is possible that being impulsive serves as a driver for platform activity rather than an outcome. Furthermore, the presence of other unmeasured confounding factors (e.g., personality traits or familial influences) may have influenced the above effects, despite the controls incorporated (i.e., gender, income).

Such gaps might be filled by future longitudinal or experimental studies that can provide evidence of causality, for example, studies that could involve controlled TikTok experiments connected to actual purchasing decisions. Expanding across multi-country samples could also provide more reassurance about the cross-cultural validity of such results, and explore how biases

such as scarcity may interact with local economic forces. Advanced techniques, including neuroimaging to monitor hedonic responses or machine learning to analyze user interactions, could expand mechanistic knowledge. Finally, distinguishing other biases (e.g., anchoring) or investigating protective factors (e.g., digital interventions) would offer more perspective on obstructing platform-induced impulsivity in children.

5. Conclusion

This study examined how platform mechanisms amplify teenagers' impulse buying. Drawing on a dataset from Vietnam, Nigeria, and Ghana, four hypotheses were tested: (1) the predictive effect of usage intensity (ordinary least squares with heteroscedasticity-consistent errors), (2) the impact of scarce content exposure (hierarchical ANOVA), (3) the mediating role of hedonic motivation (bootstrapped mediation), and (4) the effect of social identity (robust regression and Cochran–Mantel–Haenszel test). All hypotheses were supported: higher usage intensity significantly increased impulsive purchases; exposure to scarcity cues heightened impulsivity; hedonic motives explained 29% of the usage effect; and social identity amplified group consumption tendencies by 7.53 times.

Overall, platform-related factors (usage intensity, scarcity exposure, hedonic motives, social proof) accounted for 47% of the variance in impulsive purchasing, exerting stronger effects than demographic variables such as income or gender. These findings suggest that algorithmic designs leveraging cognitive biases stimulate adolescent impulse buying far more effectively than traditional marketing approaches. To mitigate risks of overconsumption, future measures should include age-restricted shopping content, bias-awareness prompts, and regulatory requirements for algorithmic transparency.

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